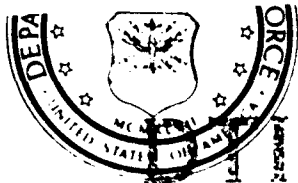
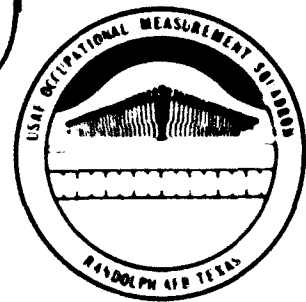


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OCCUPATIONAL SURVEY REPORT

COMMUNICATIONS SYSTEMS ELECTROMAGNETIC SPECTRUM MANAGEMENT
AND BASE-LEVEL FREQUENCY MANAGERS

AFSC 492X2

AFPT 90-492-908

SEPTEMBER 1991

91-15783



OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT SQUADRON
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78150-5000

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PREFACE

This report presents the results of an Air Force Occupational Survey of the Communications Systems Electromagnetic Spectrum Management (AFSC 492X2) career ladder and Base-Level Frequency Manager additional duty. Authority for conducting occupational surveys is contained in AFR 35-2. Computer products used in this report are available for use by operations and training officials.

Captain Jose Caussade developed the survey instrument, Rebecca Hernandez provided computer programming support, and Ms Raquel A. Soliz provided administrative support. Mr Daniel E. Dreher and Lt John Martinez analyzed the data and wrote the final report. Lt Colonel Johnny M. Collins, Chief, Airman Analysis Section, Occupational Analysis Branch, USAF Occupational Measurement Squadron, reviewed and approved this report for release.

Copies of this report are distributed to Air Staff sections and other interested training and management personnel. Additional copies may be requested from the Occupational Measurement Squadron, Attention: Chief, Occupational Analysis Branch (OMY), Randolph AFB, Texas 78150-5000.

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SUMMARY OF RESULTS

1. Survey Coverage: This report is based on data collected from 65 AFSC 492X2 respondents, which constitutes 84 percent of all assigned AFSC 492X2 personnel, 38 respondents with other AFSCs who have the job as an additional duty, and 5 civilians.
2. Career Ladder Structure: Full-time respondents were separated from additional duty respondents, and jobs performed by members of each group were identified. Although the basic job performed by both groups is Frequency Manager, some minor variations were found. Generally, full-time personnel perform more tasks than their additional duty counterparts, while those with the additional duty perform training tasks as part of the job.
3. Career Ladder Progression: Survey data show this is an atypical career ladder, as there is no 5-skill level, and 7-skill level members perform technical aspects of the career ladder, rather than act as first-line supervisors.
4. Specialty Descriptions: AFR 39-1 Specialty Descriptions accurately describe functions and tasks performed by AFSC 492X2 personnel.
5. Training Analysis: The Job Qualification Standard (JQS) is well supported by survey data. There are a number of technical tasks that are not matched to the JQS that need to be reviewed to determine if they suggest topics that should be included in the JQS.
6. Job Satisfaction: Job satisfaction indicators show most full-time members enjoy their job and feel their training and talents are used. Indicators for base-level personnel were not computed.
7. Implications: Overall, there is little difference between what full-time and base-level Frequency Managers do. In addition, since both 3- and 7-skill level members perform nearly the same technical job, and the career ladder has so few members, there is no clear indication a 5-skill level is necessary.

OCCUPATIONAL SURVEY REPORT
COMMUNICATIONS SYSTEMS ELECTROMAGNETIC SPECTRUM MANAGEMENT
AND BASE-LEVEL FREQUENCY MANAGEMENT
(AFSC 492X2)

INTRODUCTION

This is a report of an occupational survey of the AFSC 492X2 Communications Systems Electromagnetic Spectrum Management career ladder and base-level Frequency Manager additional duty. It was requested by the USAF Frequency Management Center, primarily to compare tasks performed by members with the AFSC with those performed by members of other AFSCs who perform the Frequency Manager job as an additional duty. Another issue was whether a 5-skill level should be added to the career ladder. Currently, AFSC 492X2 is a lateral career ladder, with members progressing from the 3-skill level directly to the 7-skill level. This is the first time an occupational survey has been conducted for this AFSC.

Background

The AFR 39-1 Specialty Descriptions state that 3- and 7-skill level AFSC 492X2 personnel perform and supervise electromagnetic spectrum management functions. This includes coordinating all types of radio and radar transmission and reception, recommending equipment and antennas, and resolving interference problems.

Nine-skill level and CEM code members superintend electromagnetic spectrum management activities. This includes planning, organizing, directing, inspecting, and evaluating types of activities and tasks consistent with managing the career ladder.

As mentioned earlier, the AFSC 492X2 career ladder is a lateral specialty, and those who cross-train must hold the 5-skill level in AFSCs 116X0, 492X1, or any 30XXX specialty (except 305XX and 306XX), and attend a 12-week SAFCC 49232 Interservice Radio Frequency Management course conducted at Keesler AFB. While this course is taught on an ATC base, it is managed by AFCC and has instructors from all branches of the armed services. Typically, 3 classes of 21, including civilian, officer, and enlisted students, are conducted each year. The curriculum consists of electromagnetic wave fundamentals, radio wave propagation, antennas, call signs, interference and radiation hazards, frequency allocation, regulatory agencies, tactical radio systems engineering, and electronic warfare.

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SURVEY METHODOLOGY

Data for this survey were collected using USAF Job Inventory AFPT 90-492-908 (January 1991). The Inventory Developer reviewed career ladder documents and then prepared a tentative task list, which was validated through personal interviews with 19 subject-matter experts at the following locations:

<u>BASE</u>	<u>REASON FOR VISIT</u>
Keesler AFB MI	Technical school
Bergstrom AFB TX	Tactical frequency support
Ramstein AFB GE	International frequency management
Hickam AFB HI	International frequency management
Patrick AFB FL	Combat (mobility) communications
Frequency Management Center, Washington DC	Functional headquarters

The final inventory contains 341 tasks and background questions asking respondents to indicate their status, if they perform the job as an additional duty, job satisfaction, job title, work area they are assigned to, and prior AFSC. Responses will be used to help evaluate the JQS and compare AFSC 492X2 personnel to base-level Frequency Managers who have the job as an additional duty.

Survey Administration

From January through April 1991, Consolidated Base Personnel Offices administered the surveys to AFSC 492X2 personnel selected from a computer-generated mailing list provided by the Armstrong Laboratory, Human Resources Directorate. Base level Frequency Managers who attended the annual training conference in October 1990 were also asked to complete an inventory booklet. All respondents were asked to fill in the background information section first, go through the booklet and mark all tasks they perform in their current job or as an additional duty, and then go back and rate each task they marked on a 9-point scale reflecting the relative amount of time spent on each task. Time spent ratings range from 1 (indicating a very small amount of time spent) to 9 (indicating a very large amount of time spent).

The computer calculated the relative percent time spent on all tasks for each respondent by first totaling ratings on all tasks, dividing the rating for each task by this total, and multiplying by 100. The percent time spent ratings from all inventories were then combined and used with percent member performing values to describe various groups in the career ladder.

Survey Sample

The final sample includes responses from 65 AFSC 492X2 members, 5 full-time civilians, and 38 personnel with the Base-Level Frequency Manager additional duty. As shown in Tables 1 and 2, the MAJCOM and paygrade representation of full-time members in the sample is very close to that of the total AFSC 492X2 population.

Data Processing and Analysis

Once the job inventories were received from the field, the booklets were screened for completeness and accuracy, and responses were entered into the computer to create a complete case record for each respondent. Comprehensive Occupational Data Analysis Programs (CODAP) then created a job description for each respondent, as well as composite job descriptions for members of various demographic groups. These job descriptions were used for much of the occupational analysis.

Task Factor Administration

Personnel who make decisions about career ladder documents and training programs use task factor data (training emphasis and task difficulty ratings), as well as job descriptions. The survey process provides these data by asking selected E-6 and E-7 supervisors to complete either a training emphasis (TE) or task difficulty (TD) booklet. These booklets are processed separately from the job inventories, and TE and TD data, when applicable, are considered when analyzing other issues in the study.

Training Emphasis (TE). TE is the amount of structured training first-enlistment personnel need in order to perform tasks successfully. Structured training is provided by resident technical schools, field training detachments (FTD), mobile training teams (MTT), formal OJT, or any other organized training method. Twenty experienced AFSC 492X2 supervisors rated tasks in the inventory on a 10-point scale ranging from 0 (no training emphasis required) to 9 (high TE required). Interrater agreement for the 20 supervisors is acceptable. The mean TE rating for tasks in the inventory is 2.86, and the standard deviation is 2.07. Any task with a TE rating of 4.93 or greater is considered to have high TE.

TABLE 1
MAJCOM REPRESENTATION IN SAMPLE

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
AFCC	83	79
AFSC	5	6
ELM	4	3
TAC	3	1
OTHER	5	11

Total Assigned = 77
 Total Eligible = 70
 Total in Sample = 65
 Percent of Assigned in Sample = 84%
 Percent of Eligible in Sample = 93%

TABLE 2
DISTRIBUTION OF AFSC 492X2 PAYGRADES IN SAMPLE

<u>PAYGRADE</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
E-4	1	2
E-5	22	20
E-6	45	44
E-7	25	27
E-8	7	7

Task Difficulty (TD). TD is an estimate of the length of time the average airman takes to learn to perform each task listed in the inventory. Twenty-two experienced AFSC 492X2 supervisors rated the difficulty of the tasks in the inventory on a 9-point scale ranging from 1 (easy to learn) to 9 (very difficult to learn). Interrater agreement for these 22 supervisors is also acceptable. TD ratings are normally adjusted, so tasks of average difficulty have a value of 5.00, and a standard deviation of 1.00. Any task with a TD rating of 6.00 or greater is considered to be difficult to learn.

SPECIALTY JOBS (Career Ladder Structure)

The first step in the analysis process is to identify the structure of the career ladder in terms of jobs performed. CODAP assists by creating an individual job description for each respondent based on the tasks performed and relative amount of time spent on the tasks. The CODAP automated job clustering program then compares all the individual job descriptions, locates the two descriptions with the most similar tasks and time spent ratings, and combines them to form a composite job description. In successive stages, new members are added to this initial group, or new groups are formed based on the similarity of tasks and time spent ratings. This process continues until all respondents possible are included in a group. The structure of the career ladder is then defined in terms of these groups, or jobs the respondents perform.

Overview

The career ladder structure was initially examined using the total sample. Survey data showed respondents were divided into basically two jobs, one of which was performed by 80 percent of all full-time respondents and the other performed by 92 percent of all additional duty respondents. A comparison of job descriptions for these two groups revealed members of both groups perform many common technical tasks; however, there are also some slight differences in tasks performed by members of the two groups. Because one purpose for the survey was to compare full-time and additional duty personnel, and there appeared to be some differences between the two groups, the sample was then divided so full-time respondents could be considered separately from those who perform the job as an additional duty.

Survey data show, even when the two groups are considered separately, there is basically one job, Frequency Manager, that most full-time and all additional duty personnel perform. In addition, there are three other jobs performed by just a few full-time personnel. These are identified separately because of specific tasks performed or because of the relationship of the tasks to a specific duty. These jobs are discussed below.

Jobs performed by full-time personnel are shown in Figure 1, time spent on duties by members in all jobs is presented in Table 3, while selected background information for these members is presented in Table 4. The Stage (STG) number listed by the job title listed below is a reference number assigned by CODAP, while the letter "N" refers to the number of respondents performing the job.

FULL-TIME JOBS

- | | | |
|------|--------------------------|----------------|
| I. | FREQUENCY MANAGER | (STG010, N=55) |
| II. | JUNIOR FREQUENCY MANAGER | (STG009, N=2) |
| III. | SUPERINTENDENT | (STG012, N=2) |
| IV. | TRAINING | (STG025, N=2) |

ADDITIONAL DUTY JOB

- | | | |
|----|------------------------------|----------------|
| V. | BASE-LEVEL FREQUENCY MANAGER | (STG004, N=38) |
|----|------------------------------|----------------|

FULL-TIME JOBS

I. FULL-TIME FREQUENCY MANAGER JOB (STG010, N=55). This is the basic job of the specialty. Full-Time Frequency Managers perform an average of 124 tasks, and spend 23 percent of their duty time performing communication electronics systems activities, 21 percent performing general frequency management activities, 15 percent performing frequency actions, and 15 percent performing high-frequency electromagnetic wave propagation predictions. Five respondents in this group hold the 3-skill level, 47 hold the 7-skill level, 2 hold the 9-skill level, and 1 is a civilian. AFSC 492X2 personnel performing this job average 60 months TICF, and 21 are assigned overseas. Respondents in this job spend most of their time performing the following tasks:

- calculate effective transmit power (ETP)
- prepare satellite-access requests for the GMF/SHF SATCOM system
- determine LUFs for point-to-point communications
- calculate bandwidth for frequency-modulated (FM) multichannel systems
- calculate amounts of power supplied to antennas
- calculate radar distances using pulse durations (PD)
- submit HF/ISB DCS entry frequency requests

DISTRIBUTION OF AFSC 492X2 PERSONNEL ACROSS CAREER LADDER JOBS

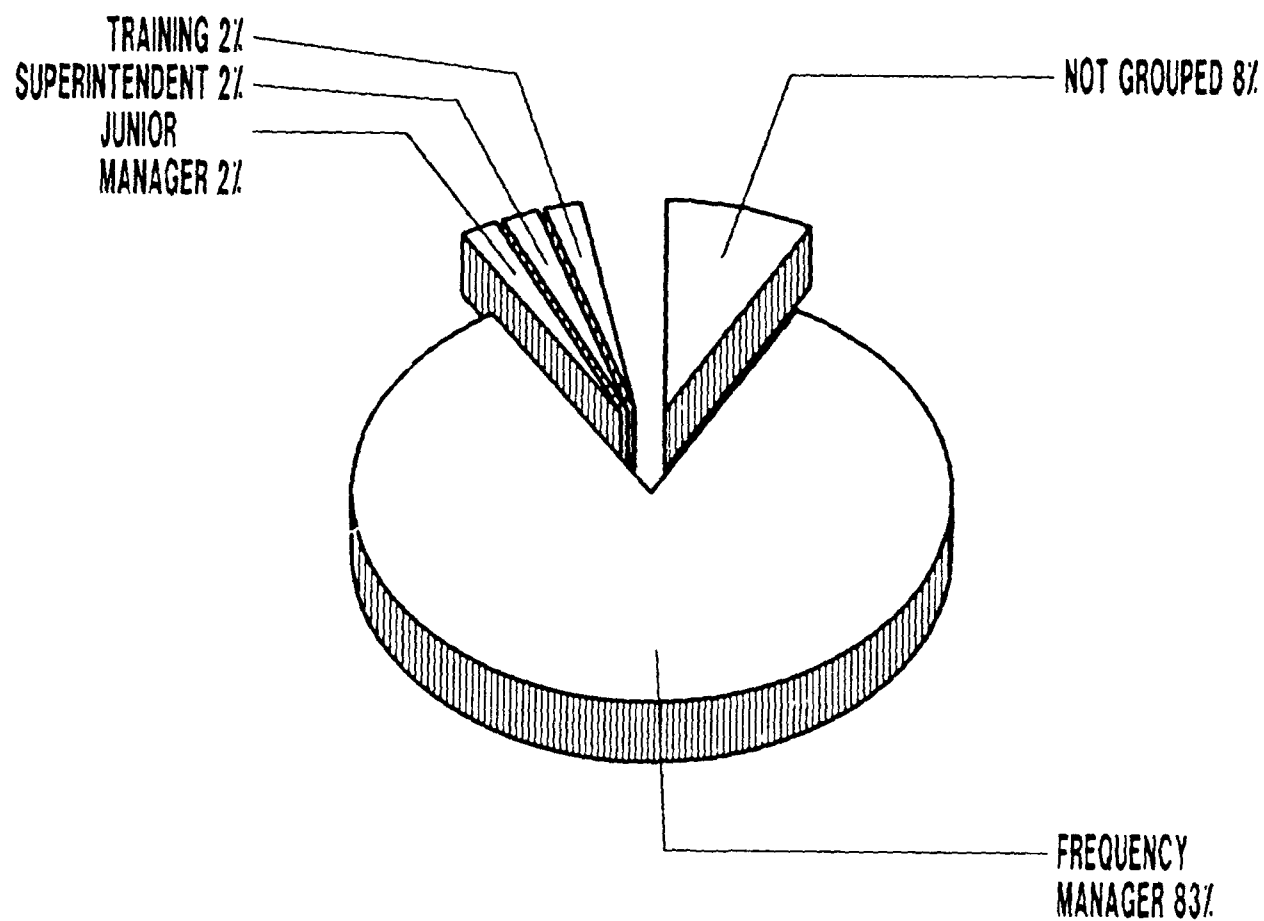


FIGURE 1

TABLE 3

DISTRIBUTION OF TIME SPENT ACROSS DUTIES BY SPECIALTY JOB MEMBERS
(RELATIVE PERCENT OF JOB TIME SPENT)

DUTIES	FREQUENCY MANAGER (N=55)	JUNIOR FREQUENCY MANAGER (N=2)	SUPT (N=2)	TRAINING (N=2)	BASE-LEVEL FREQUENCY MANAGER (N=38)
A ORGANIZING AND PLANNING	*	3	*	*	*
B DIRECTING AND IMPLEMENTING	3	2	16	2	7
C INSPECTING AND EVALUATING	6	2	16	6	14
D TRAINING	5	0	9	3	13
E PERFORMING ADMINISTRATIVE ACTIVITIES	2	0	8	14	6
F PERFORMING GENERAL FREQUENCY MANAGEMENT ACTIVITIES	21	31	25	9	21
G PERFORMING FREQUENCY ACTIONS	15	21	9	5	11
H PERFORMING HIGH FREQUENCY ELECTROMAGNETIC WAVE PROPAGATION PREDICTIONS	15	24	12	2	10
I PERFORMING COMMUNICATIONS-ELECTRONICS SYSTEMS ACTIVITIES	23	18	4	19	14
J PERFORMING SITING AND PATH ACTIVITIES	5	0	0	25	2
K PERFORMING ELECTROMAGNETIC COMPATIBILITY ACTIVITIES	2	0	0	10	*
L PERFORMING ELECTRONIC WARFARE ACTIVITIES	3	0	0	6	1

* Denotes less than 1 percent

TABLE 4

SELECTED BACKGROUND DATA ON 492X2 PERSONNEL IN CAREER LADDER JOBS

	FREQUENCY MANAGER	JUNIOR FREQUENCY MANAGEMENT	SUPERINTENDENT	TRAINING	BASE-LEVEL FREQUENCY MANAGER
NUMBER IN GROUP	55	2	2	2	38
PERCENT OF SAMPLE	51%	2%	2%	2%	35%

DAFSC DISTRIBUTION					
49232	9%	50%	50	0	0
49272	85%	50%	0	100	0
49292	4%	0	0	0	0
49291	0	0	50	0	0

PAYGRADE DISTRIBUTION					
AIRMAN	0	0	0	0	8%
E-4	2%	0	0	0	21%
E-5	24%	0	0	0	24%
E-6	36%	100	50	100	11%
E-7	29%	0	0	0	16%
E-8	7%	0	0	0	0
E-9	0	0	50	0	3%

AVERAGE NUMBER OF TASKS PERFORMED	124	17	69	99	52
AVERAGE MONTHS T1CF	60	2	96	93	80
PERCENT SUPERVISING	6%	0	0	0	16%

Survey data show there are two variations on the core Frequency Manager job. Members with the variations perform many common frequency management tasks, but are distinguished by the number of tasks performed, emphasis on a few unique tasks, or time spent on tasks related to one specific duty. Eighteen respondents reported performing an average of 71 tasks, most of which deal with performing various kinds of calculations. Two other respondents spend more time on administrative tasks.

II. JUNIOR FREQUENCY MANAGER JOB (STG009, N=2). This is the first job performed by graduates of the 3-skill level awarding course. While both respondents performing this job are paygrade E-6, they average only 2 months in the career ladder and report performing an average of only 17 tasks. Junior Frequency Managers spend 31 percent of their duty time performing general frequency management activities, 24 percent performing high frequency electromagnetic wave propagation predictions, and 21 percent performing frequency actions. Typical tasks include:

- submit HF/ISB DCS entry frequency requests
- determine LUFs for point-to-point communications
- determine station classes
- develop customer education programs
- prepare satellite-access requests for the GMF/SHF SATCOM system
- provide assigned temporary frequencies for exercises or contingencies

III. SUPERINTENDENT JOB (STG012, N=2). This is a management job performed by two AFSC 492X2 personnel. Respondents with the job perform an average of 69 tasks and spend 25 percent of their overall duty time performing general frequency management activities, 16 percent inspecting and evaluating, and 16 percent directing and implementing. Typical tasks include:

- Assist in exercise or contingency tactical line-of-sight (LOS) radio system engineer planning
- Draft inspection findings
- Analyze workload requirements
- Direct maintenance or utilization of equipment, supplies, materials, or workspace
- Perform self-inspections
- Implement self-inspection programs

IV. TRAINING JOB (SIG012, N=2). Two AFSC 492X2 personnel are assigned as instructors at the interservice school at Keesler AFB. They have responsibilities in the classroom and also with curriculum development and evaluation. These two instructors reported spending 25 percent of their duty time performing siting and path activities, 19 percent performing communications-electronics systems activities, 14 percent performing administrative activities, and 10 percent performing electromagnetic compatibility activities.

However, they did not indicate they perform typical training tasks found in Duty D. Instead, they indicated they spend a high percentage of time on siting and path activities and electromagnetic compatibility activities, topics they teach in the classroom. These two activities are only performed by frequency managers of the other armed services and Air Force civil engineering personnel. Tasks performed by the two instructors which distinguish them from other groups include:

- assist in engineering LMR nets
- select best modes of propagation, other than atmospheric
- read military grid maps
- read topographic maps
- calculate harmonic offender frequencies
- identify proper tolerances of equipment
- resolve intermodulation problems
- determine area coverages

ADDITIONAL DUTY JOB

V. BASE-LEVEL FREQUENCY MANAGER (STG004, N=38). There is essentially one additional duty job, Base-Level Frequency Manager, with some slight variations due to an emphasis on specific tasks, or differences in time spent on individual duties. Base-Level Frequency Managers range from paygrade E-1 to E-9, have a variety of primary AFSCs, and are for the most part more junior personnel, as over half are in their first 24 months TAFMS. They report spending 21 percent of their time performing tasks related to general frequency management activities, 14 percent on tasks related to communications-electronics systems activities, 14 percent inspecting and evaluating, 13 percent training, and 11 percent performing frequency actions. They are distinguished by the time they spend performing the following tasks:

- Determine LUFs for point-to-point communications
- Prepare satellite-access requests for the GMF/SHF SATCOM system
- Submit HF/ISB DCS entry frequency requests
- Provide assigned temporary frequencies for exercises or contingencies
- Evaluate tropo radio system plans for other than exercises or contingencies
- Calculate effective transmit power (ETP)

Survey data show there are six variations in the Base-Level Frequency Manager job identified separately by either the number of tasks performed, unique tasks performed, or emphasis on tasks from one duty. Members in 1 variation perform only 30 tasks, fewer than members of any job or variation. Members of another variation spend more time on two specific tasks related to

satellite frequency requests. Another variation includes performing general frequency management tasks, plus several training tasks. Yet another variation involves spending more time on administrative tasks dealing with publication libraries, budgeting, and manpower allocations. The fifth variation shows members perform an average of 176 tasks. This variation is performed by members with the highest average number of months TAFMS. The final variation involves personnel who perform a number of tasks unique to antennas and communication nets.

Summary

There is basically one job, Frequency Manager, that most full-time and all additional duty personnel perform. Survey data show, while full-time personnel perform more tasks than additional duty personnel perform, overall differences between the two groups is slight.

CAREER LADDER PROGRESSION

Analysis of DAFSC groups, together with the analysis of the career ladder structure, is an important part of each occupational survey. The DAFSC analysis identifies differences in tasks performed by members of the various skill-level groups, which in turn may be used to determine how well career ladder documents, such as AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS), reflect what members of the various skill-level groups are doing. Only full-time personnel were included in this analysis, as they are the only ones with the DAFSC.

The distribution of skill-level members in the various jobs is shown in Table 5, while relative amounts of time members of the various skill-level groups spend on duties are shown in Table 6. These data show members of all three skill-level groups are involved in technical aspects of the specialty, but 9-skill level members are more involved in administrative functions.

SKILL LEVEL DESCRIPTIONS

DAFSC 49232. Seven respondents have DAFSC 49232. Five of the seven have the Frequency Manager job. Because they hold the 3-skill level, they are fairly new to the career ladder and are in upgrade training. Three-skill level members perform an average of 70 tasks and, as shown in Table 6, spend the greatest amount of duty time performing tasks related to general frequency management activities and wave propagation predictions. Representative tasks performed are listed in Table 7.

TABLE 5
DISTRIBUTION OF AFSC 492X2 SKILL-LEVEL MEMBERS
ACROSS CAREER LADDER JOBS
(PERCENT)

<u>JOB</u>	<u>49232</u> <u>(N=7)</u>	<u>49272</u> <u>(N=53)</u>	<u>49292</u> <u>(N=4)</u>
FREQUENCY MANAGER	71	89	50
JUNIOR FREQUENCY MANAGER	14	2	0
SUPERINTENDENT	14	0	0
TRAINING	0	4	0
NOT GROUPED	1	5	50

TABLE 6
TIME SPENT ON DUTIES BY MEMBERS OF SKILL-LEVEL GROUPS
(RELATIVE PERCENT OF JOB TIME)

<u>DUTIES</u>	<u>49232</u> <u>(N=7)</u>	<u>49272</u> <u>(N=53)</u>	<u>49292</u> <u>(N=4)</u>
A ORGANIZING AND PLANNING	*	*	*
B DIRECTING AND IMPLEMENTING	4	4	9
C INSPECTING AND EVALUATING	5	6	11
D TRAINING	3	5	10
E PERFORMING ADMINISTRATIVE ACTIVITIES	1	2	5
F PERFORMING GENERAL FREQUENCY MANAGEMENT ACTIVITIES	23	21	24
G PERFORMING FREQUENCY ACTIONS	19	15	7
H PERFORMING HIGH FREQUENCY ELECTROMAGNETIC WAVE PROPAGATION PREDICTIONS	22	14	11
I PERFORMING COMMUNICATIONS-ELECTRONICS SYSTEMS ACTIVITIES	19	22	15
J PERFORMING SITING AND PATH ACTIVITIES	1	5	4
K PERFORMING ELECTROMAGNETIC COMPATIBILITY ACTIVITIES	*	2	1
L PERFORMING ELECTRONIC WARFARE ACTIVITIES	*	3	1

* Denotes less than 1 percent

TABLE 7

REPRESENTATIVE TASKS PERFORMED BY AFSC 49232 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=7)
H250 DETERMINE LUFS FOR POINT-TO-POINT COMMUNICATIONS	100
F195 PREPARE SATELLITE ACCESS REQUESTS FOR THE GMF/SHF SATCOM SYSTEM	100
G220 PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR CONTINGENCIES	100
G232 SUBMIT HF/ISB DCS ENTRY FREQUENCY REQUESTS	86
H241 ANALYZE PROPAGATION CHARTS	86
I271 CALCULATE EFFECTIVE TRANSMIT POWER (ETP)	86
G219 PREPARE SATELLITE FREQUENCY REQUESTS FOR UHF AFSATCOM SYSTEMS	86
F197 PROVIDE COMMENTS ON FREQUENCY SUPPORTABILITY	86
I264 CALCULATE AMOUNTS OF POWER SUPPLIED TO ANTENNAS	86
H257 DISTRIBUTE PROPAGATION PRODUCTS TO USERS	86
G217 NOMINATE FREQUENCIES FOR ASSIGNMENTS	86
I267 CALCULATE BANDWIDTH FOR FREQUENCY MODULATED (FM) MULTICHANNEL SYSTEMS	86
I265 CALCULATE ANTENNA FIELD STRENGTHS	86
F177 DEVELOP CUSTOMER EDUCATION PROGRAMS	86
I268 CALCULATE BANDWIDTH FOR FM SINGLE CHANNEL SYSTEMS	86
F213 USE NATIONAL TABLE OF FREQUENCY ALLOCATIONS	71
F193 MODIFY DD FORMS 1494 (APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION) VIA NOTE-TO-HOLDER	71
F186 EVALUATE SYSTEM REQUIREMENTS FOR OTHER THAN EXERCISES OR CONTINGENCIES	71
G239 VERIFY STATION CLASSES ARE CORRECT FOR REQUESTED SERVICE	71
H261 PREPARE INITIAL OR LOST COMMUNICATION FREQUENCY SCHEDULES	71
H263 REQUEST COMPUTERIZED PROPAGATION PRODUCTS	71
I274 CALCULATE FM THRESHOLDS	71
H262 PROCESS HF PROPAGATION PREDICTION REQUESTS	71
H258 EVALUATE PREDICTED PATH RELIABILITY (PPR) STUDIES	71
F199 PROVIDE SPECTRUM MANAGEMENT GUIDANCE TO DEVELOPERS	71
H247 DETERMINE FOTS FOR SHIP-TO-SHORE COMMUNICATIONS	57
I278 CALCULATE PHYSICAL HEIGHT OF DIPOLE ANTENNAS	57
F192 MAINTAIN TECHNICAL DATA FILES	57

DAFSC 49272. Forty-seven of the 53 7-skill level members have the Frequency Manager job, 1 is a Junior Frequency Manager, and 2 perform the Instructor job. Seven-skill level members have a broader job, performing an average of 120 tasks and, as shown by figures in Table 6, spend most of their duty time performing tasks related to the technical aspects of the career ladder, rather than supervisory tasks. Representative tasks performed by DAFSC 49272 are listed in Table 8. Because 7-skill level members perform many of the same tasks as 3-skill level members, only those tasks performed by higher percentages of 7-skill level members distinguish between members of the two skill level groups (Table 9). These data suggest DAFSC 49272 members have a technical and limited administrative role, rather than the traditional first-line supervisor role found in many career ladders.

DAFSC 49292. There are only four 9-skill level respondents, two of whom report being Frequency Managers (Table 5). As shown by data in Table 6, these four respondents spend most of their time on duties related to the technical aspects of the job, but also spend more time than members of other jobs on tasks related to administrative and training duties. Representative tasks performed by 9-skill level members are listed in Table 10 and include technical, administrative, and training tasks. Tasks which best distinguish between 7- and 9-skill level members are presented in Table 11. A higher percentage of 7-skill level respondents perform frequency management tasks, while a higher percentage of 9-skill level members perform administrative and training tasks.

Summary

Survey data show 3- and 7-skill level personnel spend most of their time on general frequency management activities, and 9-skill level members spend more time on administrative and training tasks. The typical supervisor-subordinate roles do not generally exist in this specialty because most members hold the 7-skill level and often only a few AFSC 492X2 personnel are assigned to a base. Only 13 of the 66 AFSC 492X2 respondents indicated they have any supervisory responsibility, and 8 of the 13 reported supervising only 1 individual.

AFR 39-1 SPECIALTY JOB DESCRIPTION ANALYSIS

The current AFR 39-1 Specialty Descriptions for the career ladder were compared to job descriptions for each job identified and for each DAFSC group. Survey data suggest the jobs and tasks included in the current AFR 39-1 Specialty Descriptions accurately reflect the work being done in the field.

TABLE 8

REPRESENTATIVE TASKS PERFORMED BY AFSC 49272 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=53)
H250 DETERMINE LUFS FOR POINT-TO-POINT COMMUNICATIONS	94
H241 ANALYZE PROPAGATION CHARTS	89
F195 PREPARE SATELLITE ACCESS REQUESTS FOR THE GMF/SHF SATCOM SYSTEM	89
F197 PROVIDE COMMENTS ON FREQUENCY SUPPORTABILITY	87
G220 PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR CONTINGENCIES	87
G232 SUBMIT HF/ISB DCS ENTRY FREQUENCY REQUESTS	85
F177 DEVELOP CUSTOMER EDUCATION PROGRAMS	85
I279 CALCULATE PHYSICAL LENGTH OF DIPOLE ANTENNAS	83
I280 CALCULATE RADAR DISTANCES USING PULSE DURATIONS (PD)	83
I281 CALCULATE RADAR DISTANCES USING PULSE REPETITION RATES (PRR)	83
I274 CALCULATE FM THRESHOLDS	83
I267 CALCULATE BANDWIDTH FOR FREQUENCY MODULATED (FM) MULTICHANNEL SYSTEMS	81
F193 MODIFY DD FORMS 1494 (APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION) VIA NOTE-TO-HOLDER	81
I276 CALCULATE LOSSES OF TRANSMISSION LINES	81
I271 CALCULATE EFFECTIVE TRANSMIT POWER (ETP)	79
I272 CALCULATE ELECTRICAL HEIGHT OF DIPOLE ANTENNAS	79
G239 VERIFY STATION CLASSES ARE CORRECT FOR REQUESTED SERVICE	79
I264 CALCULATE AMOUNTS OF POWER SUPPLIED TO ANTENNAS	77
I275 CALCULATE GAINS OF FLAT PASSIVE REFLECTORS	77
I269 CALCULATE BANDWIDTH FOR NON-FM PULSED SYSTEMS	75
H257 DISTRIBUTE PROPAGATION PRODUCTS TO USERS	75
I268 CALCULATE BANDWIDTH FOR FM SINGLE CHANNEL SYSTEMS	75
I265 CALCULATE ANTENNA FIELD STRENGTHS	74
F176 DETERMINE STATION CLASSES	74
F199 PROVIDE SPECTRUM MANAGEMENT GUIDANCE TO DEVELOPERS	74
H263 REQUEST COMPUTERIZED PROPAGATION PRODUCTS	72
I278 CALCULATE PHYSICAL HEIGHT OF DIPOLE ANTENNAS	70
F213 USE NATIONAL TABLE OF FREQUENCY ALLOCATIONS	57
G214 ASSIGN TEMPORARY FREQUENCIES FOR EXERCISES OR CONTINGENCIES	57

TABLE 9

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 49232
AND DAFSC 49272 PERSONNEL
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>	<u>49232 (N=7)</u>	<u>49272 (N=53)</u>	<u>DIFFERENCE</u>
G219 PREPARE SATELLITE FREQUENCY REQUESTS FOR UHF AFSATCOM SYSTEMS	86	64	22
I266 CALCULATE BANDWIDTH FOR AMPLITUDE MODULATED (AM) SYSTEMS	57	36	21
<hr/>			
C80 EVALUATE WORK SCHEDULES	0	60	-60
K327 IDENTIFY INTERMODULATION PRODUCTS	14	66	-52
D127 PROCURE TRAINING AIDS, SPACE, OR EQUIPMENT	14	66	-52
K328 IDENTIFY NOISE SOURCES	0	49	-49
E134 ANNOTATE SF FORMS 700 (SECURITY CONTAINER INFORMATION)	0	49	-49
F183 EVALUATE LMR SYSTEM PLANS FOR OTHER THAN EXERCISES OR CONTINGENCIES	0	47	-47

TABLE 10

REPRESENTATIVE TASKS PERFORMED BY AFSC 49292 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=4)
F195 PREPARE SATELLITE ACCESS REQUESTS FOR THE GMF/SHF SATCOM SYSTEM	100
F197 PROVIDE COMMENTS ON FREQUENCY SUPPORTABILITY	100
C068 EVALUATE JOB HAZARDS OR COMPLIANCE WITH AIR FORCE OCCUPATIONAL SAFETY AND HEALTH (AFOSH) PROGRAM STANDARDS	100
C069 EVALUATE JOB OR POSITION DESCRIPTIONS	100
B060 SUPERVISE MILITARY PERSONNEL WITH AFSCs OTHER THAN 492X2	100
B047 DIRECT MAINTENANCE OR UTILIZATION OF EQUIPMENT, SUPPLIES, MATERIALS, OR WORKSPACE	75
F193 MODIFY DD FORMS 1494 (APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION) VIA NOTE-TO-HOLDER	75
F199 PROVIDE SPECTRUM MANAGEMENT GUIDANCE TO DEVELOPERS	75
H250 DETERMINE LUFs FOR POINT-TO-POINT COMMUNICATIONS	75
H263 REQUEST COMPUTERIZED PROPAGATION PRODUCTS	75
I267 CALCULATE BANDWIDTH FOR FREQUENCY MODULATED (FM) MULTICHANNEL SYSTEMS	75
I269 CALCULATE BANDWIDTH FOR NON-FM PULSED SYSTEMS	75
I264 CALCULATE AMOUNTS OF POWER SUPPLIED TO ANTENNAS	75
I265 CALCULATE ANTENNA FIELD STRENGTHS	75
B052 IMPLEMENT SUGGESTION PROGRAMS	75
F175 DETERMINE REQUIREMENTS FOR FOREIGN DISCLOSURES	75
F176 DETERMINE STATION CLASSES	75
F177 DEVELOP CUSTOMER EDUCATION PROGRAMS	75
C061 ANALYZE INSPECTION REPORTS OR CHARTS	75
I270 CALCULATE EFFECTIVE ISOTROPIC RADIATED POWER (EIRP)	75
I268 CALCULATE BANDWIDTH FOR FM SINGLE CHANNEL SYSTEMS	75
I271 CALCULATE EFFECTIVE TRANSMIT POWER (ETP)	75
I272 CALCULATE ELECTRICAL HEIGHT OF DIPOLE ANTENNAS	75
G232 SUBMIT HF/ISB DCS ENTRY FREQUENCY REQUESTS	75
F186 EVALUATE SYSTEM REQUIREMENTS FOR OTHER THAN EXERCISES OR CONTINGENCIES	75
F187 EVALUATE TROPO RADIO SYSTEM PLANS FOR OTHER THAN EXERCISES OR CONTINGENCIES	75
D108 DEVELOP PHASE TRAINING PLANS	75
D125 PLAN OR SCHEDULE TRAINING, SUCH AS OJT OR ANCILLARY TRAINING	50
B46 DIRECT MAINTENANCE OF ADMINISTRATIVE FILES	50

TABLE 11

TASKS WHICH BEST DIFFERENTIATE BETWEEN
DAFSC 49272 AND 49292 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS	49272 (N=53)	49292 (N=4)	DIFFERENCE
G220 PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR CONTINGENCIES	87	25	62
G239 VERIFY STATION CLASSES ARE CORRECT FOR REQUESTED SERVICE	79	25	54
F183 EVALUATE LMR SYSTEM PLANS FOR OTHER THAN EXERCISES OR CONTINGENCIES	47	0	47
I277 CALCULATE NOISE THRESHOLDS	72	25	47
I289 DETERMINE MINIMUM RECEIVER INPUT SIGNAL LEVELS FOR LOS SYSTEMS	45	0	45
I278 CALCULATE PHYSICAL HEIGHT OF DIPOLE ANTENNAS	70	25	45
<hr/>			
C69 EVALUATE JOB OR POSITION DESCRIPTIONS	45	100	-55
B60 SUPERVISE MILITARY PERSONNEL WITH AFSCs OTHER THAN 492X2	51	100	-49
H247 DETERMINE FOTS FOR SHIP-TO-SHORE COMMUNICATIONS	62	100	-38
D129 SELECT PERSONNEL FOR SPECIALIZED TRAINING	42	75	-33
D95 ADMINISTER TESTS	17	50	-33
D108 DEVELOP PHASE TRAINING PLANS	43	75	-32

TRAINING ANALYSIS

Occupational survey data are a source of information used to review training documents for the specialty. The three most commonly used types of data are: (1) percent of first-enlistment personnel performing tasks, (2) ratings of how much training emphasis tasks should receive in the basic resident course, and (3) ratings of relative TD.

TE and TD data are secondary factors used in conjunction with percent members performing figures to determine what tasks should be included in entry-level training. Tasks with high TE and TD ratings and performed by moderate to high percentages of first-assignment personnel are normally taught in resident courses, while tasks with high TE and TD ratings and low percentages of first-assignment personnel performing may be more appropriate for OJT. Tasks with low TE and TD ratings are generally not included in any formal training, unless their inclusion can be justified by percent members performing, command concerns, or criticality.

School personnel can also use the Automated Training Indicator (ATI) for making training decisions. A computer program uses percent of first-assignment members performing each task, TE and TD ratings, and the Course Training Decision Table found in ATCR 52-22, Atch 1, to assign an ATI value to each task in the inventory. ATIs range from 1 to 18 and suggest which tasks are most appropriate for training and at what level. The decision table and explanation of the ATIs precede the listing of tasks in descending order of ATI in the Training Extract. School personnel will find this table and listing valuable for making decisions about training documents.

Tasks with the highest TE ratings, with accompanying percent first-job (1-24 months TICF) and first-assignment (1-48 months TICF) percent members performing are listed in Table 12, while tasks with the highest TD ratings and percent first-job, first-enlistment, and 7-skill level members performing are listed in Table 13. Most tasks with high TE are related to performing frequency actions and are performed by more than 30 percent of first-job and first-assignment members. Most tasks with high TD ratings, on the other hand, are a mixture of frequency management and training functions and are performed by fairly low percentages of first-job, first-assignment, and 7-skill level members. The Training Extract also contains listings of tasks sorted in descending order of both TE and TD.

First-Assignment Communications Systems and Electromagnetic Spectrum Management Personnel (AFSC 492X2)

Thirty-one full-time respondents indicated they are in their first assignment. As shown by Figure 2, almost all have the Frequency Manager job. First-assignment Frequency Managers spend 22 percent of their duty time performing tasks related to general frequency management functions, 22 percent on tasks related to communications-electronics systems activities, 15 percent performing frequency actions, and 15 percent performing propagation predictions (see Table 14). Representative tasks performed by first-assignment AFSC 492X2 personnel are listed in Table 15.

TABLE 12

SAMPLE OF TASKS WITH HIGHEST TRAINING EMPHASIS (TE) RATINGS

TASKS	ING EMPH	PERCENT MEMBERS PERFORMING			TASK DIFF
		1-24 TICF	1-48 TICF		
G237 SUBMIT TEMPORARY FREQUENCY PROPOSALS FOR EXERCISES OR CONTINGENCIES	6.80	33	45		5.49
G236 SUBMIT TEMPORARY FREQUENCY PROPOSAL ACTIONS, OTHER THAN EXERCISE OR CONTINGENCIES	6.60	27	35		5.06
G239 VERIFY STATION CLASSES ARE CORRECT FOR REQUESTED SERVICE	6.60	67	71		5.12
G233 SUBMIT NEW PERMANENT FREQUENCY PROPOSAL ACTIONS	6.55	47	55		5.58
G230 SUBMIT FREQUENCY ASSIGNMENT 5-YEAR REVIEW ACTIONS	6.50	40	48		4.91
G217 NOMINATE FREQUENCIES FOR ASSIGNMENTS	6.45	73	74		5.33
G234 SUBMIT PERMANENT FREQUENCY DELETION ACTIONS, OTHER THAN 5-YEAR REVIEWS	6.45	20	16		4.49
G214 ASSIGN TEMPORARY FREQUENCIES FOR EXERCISES OR CONTINGENCIES	6.40	40	52		5.14
G215 ASSIGN TEMPORARY FREQUENCIES FOR OTHER THAN EXERCISES OR CONTINGENCIES	6.40	33	45		5.27
G231 SUBMIT FREQUENCY RENEWAL ACTIONS, OTHER THAN 5-YEAR REVIEWS	6.40	13	13		4.67

TE Mean = 2.86 S.D. = 2.07
 TD Mean = 5.00 S.D. = 1.00

TABLE 12 (CONTINUED)

SAMPLE OF TASKS WITH HIGHEST TRAINING EMPHASIS (TE) RATINGS

TASKS	TNG EMPH	PERCENT MEMBERS PERFORMING		TASK DIFF
		1-24 TICF	1-48 TICF	
G235 SUBMIT PERMANENT FREQUENCY MODIFICATION ACTIONS, OTHER THAN 5-YEAR REVIEWS	6.40	33	48	5.04
G240 VERIFY STATION CLASSES ARE WITHIN ALLOCATED FREQUENCY BANDS	6.40	33	48	5.00
G220 PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR CONTINGENCIES	6.35	87	81	4.51
G226 REVIEW NEW PERMANENT FREQUENCY PROPOSAL ACTIONS FOR COMPLETENESS AND ACCURACY	6.30	7	32	6.03
F209 REVIEW RFA LISTINGS	6.25	20	29	4.82
H253 DETERMINE MOST DESIRABLE FREQUENCY RANGE	6.20	47	61	5.28
H254 DETERMINE MUFS FOR POINT-TO-POINT COMMUNICATIONS	6.20	60	61	5.05
G221 PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR OTHER THAN EXERCISES OR CONTINGENCIES	6.10	13	35	4.65
H259 GENERATE PROPAGATION CHARTS USING MUF, FOT, AND LUF PREDICTIONS	6.10	27	32	5.10
H260 INTERPRET COMPUTERIZED PROPAGATION PRODUCTS	6.10	40	45	5.09
J298 ASSIST IN ENGINEERING HF NETS	6.10	40	45	5.60
F213 USE NATIONAL TABLE OF FREQUENCY ALLOCATIONS	6.00	40	55	4.83
I286 DETERMINE EMISSION DESIGNATORS	6.00	13	23	5.77

TE Mean = 2.86 S.D. = 2.07
TD Mean = 5.00 S.D. = 1.00

TABLE 13

SAMPLE OF TASKS WITH HIGHEST TASK DIFFICULTY (TD) RATINGS

TASKS	TASK DIFF	PERCENT MEMBERS PERFORMING				TNG EMPH
		1-24 TICE	1-48 TICE	75370		
F173 DETERMINE ELECTROMAGNETIC COMPATIBILITY (EMC) WITH OTHER USER REQUIREMENTS	7.26	7	10	9		5.00
A21 ESTABLISH ORGANIZATIONAL POLICIES, SUCH AS OPERATING INSTRUCTIONS (OI) OR STANDING OPERATING PROCEDURES (SOP)	7.18	0	0	0		1.20
F167 ASSIST IN EXERCISE OR CONTINGENCY TACTICAL LINE-OF-SIGHT (LOS) RADIO SYSTEM ENGINEER PLANNING	6.72	13	16	15		5.50
I281 CALCULATE RADAR DISTANCES USING PULSE REPETITION RATES (PRR)	6.69	67	77	83		3.10
J296 ANALYZE RADIO LINK DEFICIENCIES	6.69	0	6	17		5.00
D110 DEVELOP TQT	6.68	7	19	30		.00
F203 RECOMMEND CORRECTIVE ACTION TO IMPROVE SYSTEM PERFORMANCE OR INTERSYSTEM FREQUENCY COMPATIBILITY	6.67	20	19	26		3.05
F164 ASSIST IN EXERCISE OR CONTINGENCY TACTICAL GND MOBILE FORCES/SUPER HIGH FREQ SAT COMM SYSTEM ENGINEER PLANNING	6.66	13	16	21		4.90
F170 ASSIST IN EXERCISE OR CONTINGENCY TACTICAL ULTRA HIGH FREQ AIR FORCE SAT COMM SYSTEM ENGINEER PLANNING	6.64	7	10	9		5.35
F199 PROVIDE SPECTRUM MANAGEMENT GUIDANCE TO DEVELOPERS	6.63	60	68	74		4.00

TD Mean = 5.00 S.D. = 1.00

TE Mean = 2.86 S.D. = 2.07

TABLE 13 (CONTINUED)
SAMPLE OF TASKS WITH HIGHEST TASK DIFFICULTY (TD) RATINGS

TASKS	TASK DIFF	PERCENT MEMBERS PERFORMING				TNG EMPH
		1-24 TICF	1-48 TICF	75370		
F169 ASSIST IN EXERCISE OR CONTINGENCY TACTICAL TROPOSPHERIC SCATTER (TROPO) RADIO SYSTEM ENGINEER PLANNING	6.63	13	13	17		4.85
F190 INITIATE DD FORMS 1494 (APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION)	6.62	13	26	32		3.25
I282 CALCULATE RADAR DISTANCES USING PULSE RISE TIMES (PRT)	6.58	47	52	58		3.00
D106 DEVELOP NONRESIDENT COURSE TRAINING MATERIALS	6.54	20	29	43		.20
I280 CALCULATE RADAR DISTANCES USING PULSE DURATIONS (PD)	6.50	73	81	83		3.10
D107 DEVELOP PERFORMANCE TESTS	6.50	7	16	25		.05
D108 DEVELOP PHASE TRAINING PLANS	6.46	20	35	43		.20
K326 IDENTIFY INTERFERENCE SOURCES	6.46	20	26	32		5.00
F200 PROVIDE SPECTRUM MANAGEMENT GUIDANCE TO USERS	6.46	40	48	55		5.40
F163 ASSIST IN EXERCISE OR CONTINGENCY TACTICAL AIR-TO-AIR OR AIR-TO- GROUND RADIO SYSTEM ENGINEER PLANNING	6.42	7	10	11		5.50
L336 PERFORM SPECTRUM DECONFLICTION	6.37	13	26	32		5.25
I277 CALCULATE NOISE THRESHOLDS	6.36	47	61	72		3.70
E161 WRITE DIRECTIVES OR PUBLICATIONS	6.34	0	6	9		2.55

TD Mean = 5.00 S.D. = 1.00
TE Mean = 2.86 S.D. = 2.07

DISTRIBUTION OF FIRST-ASSIGNMENT AFSC 492X2 PERSONNEL ACROSS CAREER LADDER JOBS

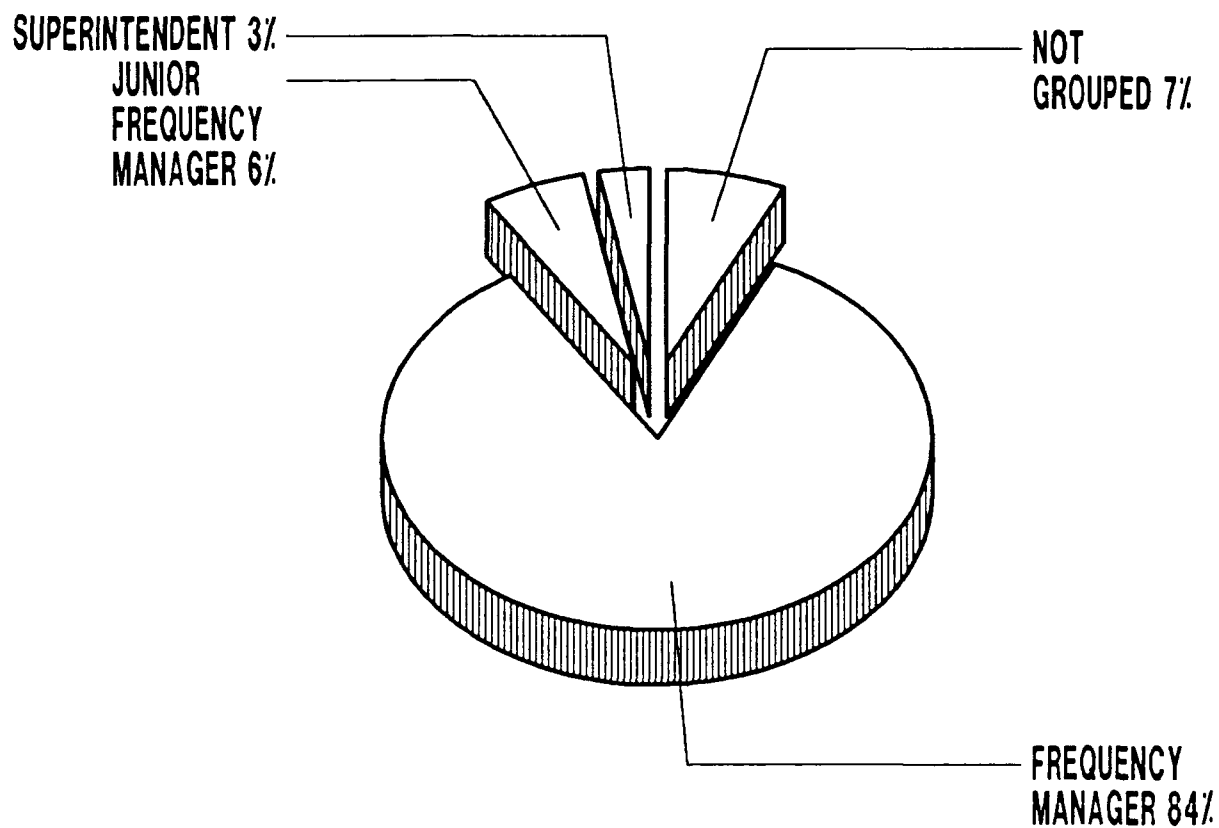


FIGURE 2

TABLE 14
RELATIVE PERCENT OF TIME SPENT ACROSS DUTIES
BY FIRST-ASSIGNMENT AFSC 492X2 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=37)
A ORGANIZING AND PLANNING	*
B DIRECTING AND IMPLEMENTING	3
C INSPECTING AND EVALUATING	6
D TRAINING	6
E PERFORMING ADMINISTRATIVE ACTIVITIES	2
F PERFORMING GENERAL FREQUENCY MANAGEMENT ACTIVITIES	22
G PERFORMING FREQUENCY ACTIONS	15
H PERFORMING HIGH FREQUENCY ELECTROMAGNETIC WAVE PROPAGATION PREDICTIONS	15
I PERFORMING COMMUNICATIONS-ELECTRONICS SYSTEMS ACTIVITIES	22
J PERFORMING SITING AND PATH ACTIVITIES	4
K PERFORMING ELECTROMAGNETIC COMPATIBILITY ACTIVITIES	1
L PERFORMING ELECTRONIC WARFARE ACTIVITIES	1

* Denotes less than 1 percent

TABLE 15
REPRESENTATIVE TASKS PERFORMED BY FIRST-ASSIGNMENT
AFSC 492X2 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=37)
H250 DETERMINE LUFs FOR POINT-TO-POINT COMMUNICATIONS	95
H241 ANALYZE PROPAGATION CHARTS	89
G232 SUBMIT HF/ISB DCS ENTRY FREQUENCY REQUESTS	84
F195 PREPARE SATELLITE ACCESS REQUESTS FOR THE GMF/SHF SATCOM SYSTEM	84
I271 CALCULATE EFFECTIVE TRANSMIT POWER (ETP)	81
G220 PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR CONTINGENCIES	81
I264 CALCULATE AMOUNTS OF POWER SUPPLIED TO ANTENNAS	78
F177 DEVELOP CUSTOMER EDUCATION PROGRAMS	78
I274 CALCULATE FM THRESHOLDS	76
I279 CALCULATE PHYSICAL LENGTH OF DIPOLE ANTENNAS	76
I280 CALCULATE RADAR DISTANCES USING PULSE DURATIONS	76
F193 MODIFY DD FORMS 1494 (APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION) VIA NOTE-TO-HOLDER	73
G239 VERIFY STATION CLASSES ARE CORRECT FOR REQUESTED SERVICE	73
I276 CALCULATE LOSSES OF TRANSMISSION LINES	73
I268 CALCULATE BANDWIDTH FOR FM SINGLE CHANNEL SYSTEMS	73
I281 CALCULATE RADAR DISTANCES USING PULSE REPETITION RATES (PRR)	73
I272 CALCULATE ELECTRICAL HEIGHT OF DIPOLE ANTENNAS	73
I267 CALCULATE BANDWIDTH FOR FREQUENCY MODULATED (FM) MULTICHANNEL SYSTEMS	70
F176 DETERMINE STATION CLASSES	70
I269 CALCULATE BANDWIDTH FOR NON-FM PULSED SYSTEMS	70
I265 CALCULATE ANTENNA FIELD STRENGTHS	70
I275 CALCULATE GAINS OF FLAT PASSIVE REFLECTORS	70
F186 EVALUATE SYSTEM REQUIREMENTS FOR OTHER THAN EXERCISES OR CONTINGENCIES	68
H263 REQUEST COMPUTERIZED PROPAGATION PRODUCTS	65
H261 PREPARE INITIAL OR LOST COMMUNICATION FREQUENCY SCHEDULES	62
F213 USE NATIONAL TABLE OF FREQUENCY ALLOCATIONS	46
G214 ASSIGN TEMPORARY FREQUENCIES FOR EXERCISES OR CONTINGENCIES	46

Job Qualification Standard

For the purposes of reviewing the Job Qualification Standard (JQS), USAFOMS personnel met with personnel from the 1872 TDS at Keesler AFB and matched tasks listed in the job inventory to each line item of the JQS. A computer listing of the JQS with the matched tasks, percent members performing the tasks, TE and TD ratings, and ATI for each task is included in the Training Extract sent to the school for review. Criteria set forth in AFR 8-13, AFR 8-13/ATC Supplement 1 (Attachment 1, paragraph A1-3c(4)), and ATCR 52-22 Attachment 1, were used to review the relevance of the JQS.

The JQS has 18 topics, all of which have a number of inventory tasks matched to them. Using AFR 8-13 criteria and percentages of AFSC 492X2 respondents, all 18 topics are supported by survey data, meaning tasks matched are performed by more than 20 percent of all first-job, first-assignment, or 7-skill level members.

There are a number of technical tasks performed by more than 20 percent of all respondents that are not matched to JQS elements (see Table 16). While most do not have high TE, most reflect a high percent members performing, and some are considered difficult. These tasks were reviewed to determine if they deal with a particular function. A number deal with calculations related to antennas, and others deal with determining frequencies for different types of communications. School personnel need to review these tasks to determine if they suggest subject material that should be included in the JQS, or if they are substeps of functions already covered.

Summary

The JQS is well supported by survey data. Unmatched tasks with high percent members performing need to be reviewed.

JOB SATISFACTION

Respondents were asked to indicate how interested they are in their jobs, if they feel their talents and training are being used, and if they intend to reenlist. Satisfaction indicators for AFSC 492X2 respondents are shown in Table 17. Overall indicators are higher for the more experienced members, with a higher percentage of 49-96 month TDCF members finding their job interesting and feeling their training is well used.

TABLE 16

SAMPLE OF TECHNICAL TASKS PERFORMED BY MORE THAN 20 PERCENT OF
ALL CRITERION GROUP MEMBERS, BUT NOT MATCHED TO AFSC 492X2 JQS

TASKS	TNG EMPH	PERCENT MEMBERS PERFORMING				TASK DIFF	ATT
		1-24 TICE	1-48 TICE	7- TICE	7- LVL		
G218 PREPARE SATELLITE FREQUENCY REQUESTS FOR GMF/SHF SATCOM SYSTEMS	4.65	47	55	58		4.83	16
G219 PREPARE SATELLITE FREQUENCY REQUESTS FOR UHF AFSATCOM SYSTEMS	4.85	60	61	64		4.56	16
H247 DETERMINE FOTS FOR SHIP-TO-SHORE COMMUNICATIONS	3.05	40	55	62		4.98	16
H250 DETERMINE LUFs FOR POINT-TO-POINT COMMUNICATIONS	5.15	100	97	94		5.21	17
H253 DETERMINE MOST DESIRABLE FREQUENCY RANGE	6.20	47	61	68		5.28	17
H254 DETERMINE MUFs FOR POINT-TO-POINT COMMUNICATIONS	6.20	60	61	62		5.05	17
H255 DETERMINE MUFs FOR SHIP-TO-SHORE COMMUNICATIONS	3.05	47	61	64		4.94	16
H256 DETERMINE TAKEOFF ANGLES	4.75	40	55	57		5.55	17
H261 PREPARE INITIAL OR LOST COMMUNICATION FREQUENCY SCHEDULES	3.80	53	71	70		4.27	16
H263 REQUEST COMPUTERIZED PROPAGATION PRODUCTS	3.55	53	68	72		3.50	16
I264 CALCULATE AMOUNTS OF POWER SUPPLIED TO ANTENNAS	4.15	87	84	77		5.39	17
I265 CALCULATE ANTENNA FIELD STRENGTHS	4.00	67	74	74		5.58	17
I266 CALCULATE BANDWIDTH FOR AMPLITUDE MODULATED (AM) SYSTEMS	3.75	27	42	36		5.75	15
I267 CALCULATE BANDWIDTH FOR FREQUENCY MODULATED (FM) MULTICHANNEL SYSTEMS	3.90	67	74	81		5.84	17

TE Mean = 2.97 S.D. = 1.85

TD Mean = 5.00 S.D. = 1.00

TABLE 16 (CONTINUED)

SAMPLE OF TECHNICAL TASKS PERFORMED BY MORE THAN 20 PERCENT OF
ALL CRITERION GROUP MEMBERS, BUT NOT MATCHED TO AFSC 492X2 JQS

TASKS	TNG EMPH	MEMBERS PERFORMING			TASK DIFF	ATI
		1-24 TICF	1-48 TICF	7- LVL		
I268	4.00	73	77	75	5.72	17
I269	3.30	67	74	75	5.94	17
I270	4.15	53	65	74	5.81	17
I271	4.60	87	84	79	5.81	17
I272	3.75	73	77	79	5.23	17
I273	3.75	33	45	38	5.23	15
I274	3.65	67	74	83	6.21	18
I275	3.10	53	68	77	6.25	18
I276	3.80	60	71	81	5.63	17
I277	3.70	47	61	72	6.36	18
I278	4.00	47	61	70	4.92	16
I279	4.30	67	77	83	4.83	16
I280	3.10	73	81	83	6.50	18
I281	3.10	67	77	83	6.69	18
I282	3.00	47	52	58	6.58	18

TE Mean = 2.97 S.D. = 1.85

TD Mean = 5.00 S.D. = 1.00

TABLE 17

JOB SATISFACTION INDICATORS FOR 492X2
TICF GROUPS IN CURRENT STUDY
(PERCENT MEMBERS RESPONDING)

	TICF		
	1-48 MONTHS 492X2 (N=37)	49-96 MONTHS 492X2 (N=20)	97+ MONTHS 492X2 (N=14)
<u>EXPRESSED JOB INTEREST:</u>			
INTERESTING	59	85	64
SO-SO	16	15	29
DULL	16	0	0
<u>PERCEIVED USE OF TALENTS:</u>			
FAIRLY WELL TO GOOD	67	90	92
LITTLE OR NOT AT ALL	24	10	0
<u>PERCEIVED USE OF TRAINING:</u>			
FAIRLY WELL TO GOOD	62	95	85
LITTLE OR NOT AT ALL	30	5	7
<u>REENLISTMENT INTENTIONS:</u>			
WILL REENLIST	65	55	29
WILL NOT REENLIST	3	10	0
WILL RETIRE	22	35	64

No lateral career ladders were surveyed in 1990

IMPLICATIONS

Overall, there is little difference between what Full-Time and Base-Level Frequency Managers do. Full-time AFSC 492X2 personnel perform a higher average number of tasks, while base-level personnel are somewhat more involved in training and administrative functions. Both 3- and 7-skill level members perform the technical aspects of the specialty, instead of 7-skill level members being first-line supervisors. Because of this, the 5-skill level may not be necessary for this career ladder.

Job satisfaction indicators indicate most full-time members enjoy their job and feel their training and talents are used. The JQS for the specialty is supported, but there are unmatched tasks that need to be reviewed by school personnel.

APPENDIX A
SELECTED REPRESENTATIVE TASKS PERFORMED BY
MEMBERS OF CAREER LADDER JOBS

TABLE A1
FULL-TIME FREQUENCY MANAGER
(STG010)

NUMBER IN GROUP: 55 AVERAGE TIME IN JOB: 24 MONTHS
PERCENT OF TOTAL SAMPLE: 51% AVERAGE TICF: 60 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
F195 PREPARE SATELLITE ACCESS REQUESTS FOR THE GMF/SHF SATCOM SYSTEM	98
F197 PROVIDE COMMENTS ON FREQUENCY SUPPORTABILITY	98
H250 DETERMINE LUFs FOR POINT-TO-POINT COMMUNICATIONS	96
G220 PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR CONTINGENCIES	95
I280 CALCULATE RADAR DISTANCES USING PULSE DURATIONS (PD)	93
I281 CALCULATE RADAR DISTANCES USING PULSE REPETITION RATES (PRR)	93
H241 ANALYZE PROPAGATION CHARTS	93
G217 NOMINATE FREQUENCIES FOR ASSIGNMENTS	92
I267 CALCULATE BANDWIDTH FOR FREQUENCY MODULATED (FM) MULTICHANNEL SYSTEMS	91
G232 SUBMIT HF/ISB DCS ENTRY FREQUENCY REQUESTS	91
I274 CALCULATE FM THRESHOLDS	91
I271 CALCULATE EFFECTIVE TRANSMIT POWER (ETP)	89
I279 CALCULATE PHYSICAL LENGTH OF DIPOLE ANTENNAS	89
I276 CALCULATE LOSSES OF TRANSMISSION LINES	89
I272 CALCULATE ELECTRICAL HEIGHT OF DIPOLE ANTENNAS	89
F193 MODIFY DD FORMS 1494 (APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION) VIA NOTE-TO-HOLDER	87
I264 CALCULATE AMOUNTS OF POWER SUPPLIED TO ANTENNAS	85
I269 CALCULATE BANDWIDTH FOR NON-FM PULSED SYSTEMS	85
H257 DISTRIBUTE PROPAGATION PRODUCTS TO USERS	85
I265 CALCULATE ANTENNA FIELD STRENGTHS	85
I268 CALCULATE BANDWIDTH FOR FM SINGLE CHANNEL SYSTEMS	85
I275 CALCULATE GAINS OF FLAT PASSIVE REFLECTORS	85
I270 CALCULATE EFFECTIVE ISOTROPIC RADIATED POWER (EIRP)	85
H263 REQUEST COMPUTERIZED PROPAGATION PRODUCTS	84
F199 PROVIDE SPECTRUM MANAGEMENT GUIDANCE TO DEVELOPERS	84
G239 VERIFY STATION CLASSES ARE CORRECT FOR REQUESTED SERVICE	84
I277 CALCULATE NOISE THRESHOLDS	82
H261 PREPARE INITIAL OR LOST COMMUNICATION FREQUENCY SCHEDULES	80
I278 CALCULATE PHYSICAL HEIGHT OF DIPOLE ANTENNAS	78

TABLE A2
FULL-TIME JUNIOR FREQUENCY MANAGERS
(STG009)

NUMBER IN GROUP: 2
PERCENT OF TOTAL SAMPLE: 2%

AVERAGE TIME IN JOB: 2 MONTHS
AVERAGE TICF: 2 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
G232 SUBMIT HF/ISB DCS ENTRY FREQUENCY REQUESTS	100
H250 DETERMINE LUFs FOR POINT-TO-POINT COMMUNICATIONS	100
F176 DETERMINE STATION CLASSES	100
F177 DEVELOP CUSTOMER EDUCATION PROGRAMS	100
F213 USE NATIONAL TABLE OF FREQUENCY ALLOCATIONS	100
A4 DETERMINE LOGISTICS REQUIREMENTS, SUCH AS EQUIPMENT, PERSONNEL, OR SPACE	100
F189 IDENTIFY FREQUENCIES TO FILL REQUIREMENTS FOR PLANS OR ANNEXES	100
F195 PREPARE SATELLITE ACCESS REQUESTS FOR THE GMF/SHF SATCOM SYSTEM	50
G220 PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR CONTINGENCIES	50
H247 DETERMINE FOTS FOR SHIP-TO-SHORE COMMUNICATIONS	50
I264 CALCULATE AMOUNTS OF POWER SUPPLIED TO ANTENNAS	50
I267 CALCULATE BANDWIDTH FOR FREQUENCY MODULATED (FM) MULTICHANNEL SYSTEMS	50
F193 MODIFY DD FORMS 1494 (APPLICATION FOR EQUIPMENT FREQUENCY ALLOCATION) VIA NOTE-TO-HOLDER	50
H241 ANALYZE PROPAGATION CHARTS	50
B046 DIRECT MAINTENANCE OF ADMINISTRATIVE FILES	50
C68 EVALUATE JOB HAZARDS OR COMPLIANCE WITH AIR FORCE OCCUPATIONAL SAFETY AND HEALTH (AFOSH) PROGRAM STANDARDS	50
F187 EVALUATE TROPO RADIO SYSTEM PLANS FOR OTHER THAN EXERCISES OR CONTINGENCIES	50
G219 PREPARE SATELLITE FREQUENCY REQUESTS FOR UHF AFSATCOM SYSTEMS	50
H257 DISTRIBUTE PROPAGATION PRODUCTS TO USERS	50
I268 CALCULATE BANDWIDTH FOR FM SINGLE CHANNEL SYSTEMS	50
I269 CALCULATE BANDWIDTH FOR NON-FM PULSED SYSTEMS	50
I274 CALCULATE FM THRESHOLDS	50
I275 CALCULATE GAINS OF FLAT PASSIVE REFLECTORS	50
I276 CALCULATE LOSSES OF TRANSMISSION LINES	50
I279 CALCULATE PHYSICAL LENGTH OF DIPOLE ANTENNAS	50

TABLE A3
FULL-TIME SUPERINTENDENT
(STGC12)

NUMBER IN GROUP: 2
PERCENT OF TOTAL SAMPLE: 2%

AVERAGE TIME IN JOB: 13 MONTHS
AVERAGE TICF: 96 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
F167 ASSIST IN EXERCISE OR CONTINGENCY TACTICAL LINE-OF-SIGHT (LOS) RADIO SYSTEM ENGINEER PLANNING	100
B48 DRAFT INSPECTION FINDINGS	100
C62 ANALYZE WORKLOAD REQUIREMENTS	100
B47 DIRECT MAINTENANCE OR UTILIZATION OF EQUIPMENT, SUPPLIES, MATERIALS, OR WORKSPACE	100
C86 PERFORM SELF-INSPECTIONS	100
B51 IMPLEMENT SELF-INSPECTION PROGRAMS	100
D127 PROCURE TRAINING AIDS, SPACE, OR EQUIPMENT	100
C61 ANALYZE INSPECTION REPORTS OR CHARTS	100
E144 ESTABLISH REQUIREMENTS FOR OFFICE FORMS	100
F202 RECOMMEND CORRECTIVE ACTION TO IMPROVE INTERSERVICE FREQUENCY COMPATIBILITY	100
C68 EVALUATE JOB HAZARDS OR COMPLIANCE WITH AIR FORCE OCCUPATIONAL SAFETY AND HEALTH (AFOSH) PROGRAM STANDARDS	100
F195 PREPARE SATELLITE ACCESS REQUESTS FOR THE GMF/SHF SATCOM SYSTEM	100
F197 PROVIDE COMMENTS ON FREQUENCY SUPPORTABILITY	100
G218 PREPARE SATELLITE FREQUENCY REQUESTS FOR GMF/SHF SATCOM SYSTEMS	100
G220 PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR CONTINGENCIES	100
H241 ANALYZE PROPAGATION CHARTS	100
E152 MANAGE CLASSIFIED MATERIALS	100
G240 VERIFY STATION CLASSES ARE WITHIN ALLOCATED FREQUENCY BANDS	100
B54 INITIATE PERSONNEL ACTION REQUESTS, SUCH AS AF FORMS 2096 (CLASSIFICATION/ON-THE-JOB TRAINING ACTION)	100
B57 SUPERVISE COMMUNICATIONS SYSTEMS ELECTROMAGNETIC SPECTRUM MANAGEMENT SPECIALISTS (AFSC 49232)	100
D102 COUNSEL TRAINEES ON TRAINING PROGRESS	100
F191 MAINTAIN RADIO FREQUENCY AUTHORIZATION (RFA) LISTS	100
D105 DEVELOP NEW EQUIPMENT TRAINING PROGRAMS	100
B49 IMPLEMENT COST-REDUCTION PROGRAMS	50
E154 PREPARE CORRESPONDENCE, OTHER THAN FREQUENCY PROPOSALS	50

TABLE A4
FULL-TIME TRAINING
(STG025)

NUMBER IN GROUP: 2
PERCENT OF TOTAL SAMPLE: 2%

AVERAGE TIME IN JOB: 30 MONTHS
AVERAGE TICF: 93 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
I289 DETERMINE MINIMUM RECEIVER INPUT SIGNAL LEVELS FOR LOS SYSTEMS	100
I285 CALCULATE SIGNAL-TO-NOISE RATIOS	100
I290 DETERMINE MINIMUM RECEIVER INPUT SIGNAL LEVELS FOR TROPO SYSTEMS	100
J299 ASSIST IN ENGINEERING LMR NETS	100
I282 CALCULATE RADAR DISTANCES USING PULSE RISE TIMES (PRT)	100
I286 DETERMINE EMISSION DESIGNATORS	100
I287 DETERMINE GAINS OF ANTENNAS	100
J301 ASSIST IN ENGINEERING SATELLITE NETS	100
I293 SELECT DIRECTIONS OF MAXIMUM RADIATION FOR ANTENNAS, OTHER THAN LONG WIRE	100
I294 SELECT DIRECTIONS OF MAXIMUM RADIATION FOR COMMON ARRAYS	100
I295 SELECT DIRECTIONS OF MAXIMUM RADIATION FOR LONG WIRE ANTENNAS	100
J321 SELECT BEST MODES OF PROPAGATION, OTHER THAN ATMOSPHERIC	100
I283 CALCULATE RECEIVER SENSITIVITIES	100
I284 CALCULATE SATELLITE LOOK ANGLES	100
J319 READ MILITARY GRID MAPS	100
J320 READ TOPOGRAPHIC MAPS	100
I288 DETERMINE MEDIAN RECEIVER INPUT SIGNAL LEVELS	100
I291 DETERMINE OCCUPIED BANDWIDTHS	100
J297 ASSIST IN ENGINEERING AIR-TO-GROUND NETS	100
J308 CALCULATE TRUE AZIMUTHS	100
J310 DETERMINE ATMOSPHERIC EFFECTS OF PROPAGATION PATHS	100
J316 DETERMINE SYSTEM RELIABILITY FOR LOS SYSTEMS	100
K322 ASSIST USERS IN PREPARING MEACONING, INTRUSION, JAMMING, AND INTERFERENCE (MIJI) REPORTS	100
K323 CALCULATE HARMONIC OFFENDER FREQUENCIES	100
K329 IDENTIFY PROPER TOLERANCES OF EQUIPMENT	100
K331 RESOLVE INTERMODULATION PROBLEMS	100
K332 REVIEW INTERFERENCE REPORTS	100
J307 CALCULATE PREDICTED RELIABILITY OF SYSTEMS	100
J309 DETERMINE AREA COVERAGES	100
J313 DETERMINE REQUIRED ANTENNAE HEIGHT, OTHER THAN DIPOLE	100

TABLE A5
BASE-LEVEL FREQUENCY MANAGER
(STG004)

NUMBER IN GROUP: 38
PERCENT OF TOTAL SAMPLE: 35%

AVERAGE TIME IN JOB: 34 MONTHS
AVERAGE TAFMS: 80 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
H250 DETERMINE LUFS FOR POINT-TO-POINT COMMUNICATIONS	89
G232 SUBMIT HF/ISB DCS ENTRY FREQUENCY REQUESTS	87
F187 EVALUATE TROPO RADIO SYSTEM PLANS FOR OTHER THAN EXERCISES OR CONTINGENCIES	87
G220 PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR CONTINGENCIES	82
F195 PREPARE SATELLITE ACCESS REQUESTS FOR THE GMF/SHF SATCOM SYSTEM	79
I271 CALCULATE EFFECTIVE TRANSMIT POWER (ETP)	76
G218 PREPARE SATELLITE FREQUENCY REQUESTS FOR GMF/SHF SATCOM SYSTEMS	76
I274 CALCULATE FM THRESHOLDS	76
F212 USE INTERNATIONAL TABLE OF FREQUENCY ALLOCATIONS	74
H241 ANALYZE PROPAGATION CHARTS	71
D127 PROCURE TRAINING AIDS, SPACE, OR EQUIPMENT	71
C68 EVALUATE JOB HAZARDS OR COMPLIANCE WITH AIR FORCE OCCUPATIONAL SAFETY AND HEALTH (AFOSH) PROGRAM STANDARDS	71
I275 CALCULATE GAINS OF FLAT PASSIVE REFLECTORS	71
D129 SELECT PERSONNEL FOR SPECIALIZED TRAINING	68
I276 CALCULATE LOSSES OF TRANSMISSION LINES	68
I278 CALCULATE PHYSICAL HEIGHT OF DIPOLE ANTENNAS	66
H242 CALCULATE FREE SPACE LOSSES	63
F186 EVALUATE SYSTEM REQUIREMENTS FOR OTHER THAN EXERCISES OR CONTINGENCIES	63
G239 VERIFY STATION CLASSES ARE CORRECT FOR REQUESTED SERVICE	63
F197 PROVIDE COMMENTS ON FREQUENCY SUPPORTABILITY	63
H248 DETERMINE GROUNDWAVE PROPAGATION PREDICTIONS	61
D105 DEVELOP NEW EQUIPMENT TRAINING PROGRAMS	61
G219 PREPARE SATELLITE FREQUENCY REQUESTS FOR UHF AFSATCOM SYSTEMS	61
G224 REVIEW FREQUENCY RENEWAL ACTIONS, OTHER THAN 5-YEAR REVIEWS FOR COMPLETENESS AND ACCURACY	47
C84 INSPECT PERSONNEL FOR COMPLIANCE WITH MILITARY STANDARDS	45